8.1.9.y *Otay Mesa Road Helix (J 2 S)*

Site Description and Existing Conditions

Otay Mesa Road Helix (J 2 S) is a one-acre site northwest of the intersection of Otay Mesa Road and Corporate Center Drive in Otay Mesa. This site was preserved as mitigation for the Otay Mesa Road Widening project per U.S. Fish and Wildlife Service Biological Opinion 1-6-97-F-20, which includes vernal pool restoration and upland restoration components. The parcel is designated/dedicated open space within the MHPA and owned by the City of San Diego. Surrounding land uses include business parks, vernal pool preserves and transportation.

Thirteen vernal pools (843 m^2 total area [9073.976 ft^2]) were restored according to the specifications included in the *Otay Mesa Road Vernal Pool Mitigation Plan* (Helix, 1998). Vernal pools occurred in this area historically, but many were disturbed or destroyed by off-road vehicle use prior to restoration. The soils are Stockpen gravelly clay loam, and upland areas have been re-vegetated with coastal sage scrub. Sensitive vernal pool species recorded include *E. aristulatum*, *N. fossalis*, *O. californica*, *P. nudiuscula*, *B. sandiegonensis*, and *S. woottoni*. Impacts to 0.09 acre of vernal pools and 0.67 acre of associated watersheds were approved as part of the Otay Mesa Road Widening project.

Although considered separately here due to ownership and conservation status, the Otay Mesa Road Helix site is geographically related to vernal pools at J 2 West, Otay Mesa Road Recon, Hidden Trails, and Cal Terraces, and is part of the same complex and series.

Prior to preservation and vernal pool restoration, the site was impacted by off-road vehicle use and illegal dumping. However, Mima mounds and coastal sage scrub vegetation were still present in some areas. The site is currently fenced; the restoration process began in 1998.

Threats

Restoration Success

The *Otay Mesa Road Vernal Pool Mitigation Plan* (Helix, 1998) specifies success criteria for the restored vernal pools, including species richness, vegetative cover, target species, and hydrologic regime. Remedial measures, approved by the City, will be required if restoration success criteria are not met within the specified time period.

Invasive Species

Prior to restoration, non-native invasive species were introduced through disturbance associated with off-road vehicle use, etc. Both uplands and vernal pools have been re-vegetated in accordance with the accepted mitigation plan, which recognizes that weeds are a typical problem with habitat restoration and specify monitoring schedules as well as thresholds for tolerance of non-native species (relative total cover) and mechanisms for removal, as necessary. *Chrysanthemum* species were observed invading the site from an area along SR-905.

Trespass
Trespass has been significantly lowered through the installation of fencing and signage and the presence of restoration crews and Border Patrol. Limited impacts from immigrant foot traffic continue to occur.

Edge Effects
The restoration site is adjacent to an existing industrial park/warehouse complex, and litter and non-native species from the developed area may impact the preserve. However, the area is also connected to a large open space/MHPA area, including additional vernal pool sites, which minimizes impacts from isolation.

Required Management Activities

The contractual obligations contained in the *Otay Mesa Road Vernal Pool Mitigation Plan* (Helix, 1998) and the Biological Opinion have been fulfilled, including:

1) 2:1 mitigation for impacts to 0.09 acre of vernal pools and 0.67 acre of associated watersheds immediately adjacent to the impacted area,
2) Indirect impacts to vernal pools will be minimized through the construction of a curb along the edge of OMR adjacent to the three vernal pool watershed impact areas to direct runoff from the road away from the vernal pool watersheds, and
3) Indirect impacts to Pardee Construction's mitigation site which supports both species of fairy shrimp will be minimized through construction of a retaining wall adjacent to Otay Mesa Road in the watershed area of the pools on Corporate Center South.

The Biological Opinion states, "The City of San Diego shall assume perpetual management responsibilities of the mitigation and the costs associated with such responsibilities."

As part of the project, the site has been fenced with permanent chain link and appropriate signage has been posted.

Management Recommendations

Active habitat management shall continue, as necessary, to maintain the quality of the site. Fence repair will be required as necessary in perpetuity. Semi-annual maintenance patrols should occur to determine the need for fence repair and/or signage replacement, as well as litter and invasive species assessment.

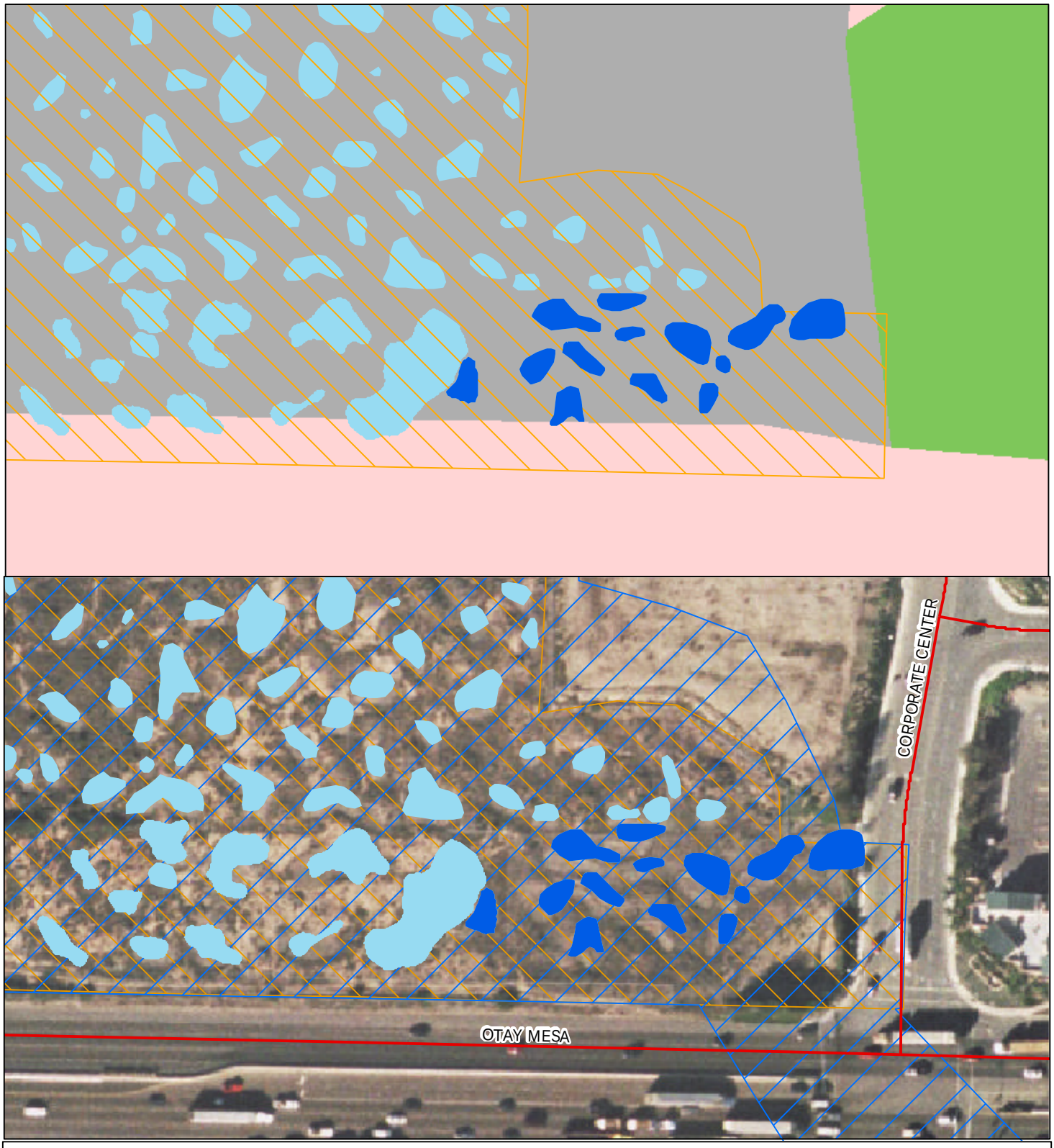
Weeding within and immediately adjacent to vernal pools should be done by hand. In upland areas, mechanical removal may be necessary, however, herbicides should not be used in or adjacent to vernal pools. Targeted species for removal include, but are not limited to Italian ryegrass (*Lolium multiflorum*), rabbitfoot grass (*Polypogon monspeliensis*), yard knotweed (*Polygonum arenastrum*), fennel (*Foeninculum vulgare*) and curly dock (*Rumex crispus*). Remove *Chrysanthemum* spp. from the southern edge along SR-905.

If the maintenance patrols determine that active management is necessary after completion of the mitigation period, all work should take into the consideration the sensitivity of on-site habitats, including adequate training of crews and supervision by a qualified biologist.

As additional information becomes available, the site shall be managed to improve habitat conditions for native, solitary bees known as obligate pollinators for vernal pool species.

Land managers should encourage research at this site, especially relating to the long-term success of restored and created vernal pools and upland vegetation.

Figure 67



Otay Mesa Road Helix (J 2 S)

Roads
MHPA
Conserved Lands
Vernal Pools at Site
Adjacent Vernal Pools
Grassland
Disturbed Land
Agriculture

0.02
Miles
Kilometers
0.05

Note: MHPA and Roads not shown in top map; vegetation mapping per Ogden 1997.

8.1.9.z *Otay Mesa Road RECON (J 2 W)*

Site Description and Existing Conditions

Otay Mesa Road RECON (J 2 W) is a 2.5-acre site northwest of the intersection of Otay Mesa Road and Corporate Center Drive in Otay Mesa. The site is designated/dedicated open space within the MHPA owned by the City of San Diego. Surrounding land uses include business parks, vernal pool preserves and transportation.

Twenty vernal pools (1,839 m^2 total area [0.454 acres]) were restored according to the specifications included in the *City of San Diego Vernal Pool and Coastal Sage Scrub Restoration and Preservation Plan on Otay Mesa* (RECON, 1998), and funded through a NCCP Local Assistance Grant to the City of San Diego in 1998. Vernal pools occurred in this area historically, but many were disturbed or destroyed by off-road vehicle use prior to restoration. The site is characterized by Stockpen gravelly clay loam, and upland areas have been re-vegetated with coastal sage scrub. Sensitive species on-site include *E. aristulatum*, *N. fossalis*, *O. californica*, *P. nudiuscula*, *B. sandiegonensis*, and *S. woottoni*.

Although considered separately here due to ownership and conservation status, the Otay Mesa Road RECON site is geographically related to vernal pools at J 2 West, Otay Mesa Road Helix, Hidden Trails and Cal Terraces, and part of the same complex and series.

Threats

Restoration Success

The *City of San Diego Vernal Pool and Coastal Sage Scrub Restoration and Preservation Plan on Otay Mesa* (RECON, 1998) specifies success criteria for the restored vernal pools, including species diversity, target vegetative cover, indicator wildlife species, percent cover of weed species and hydrologic regime.

Invasive Species

Prior to restoration, non-native invasive species were introduced through disturbance associated with off-road vehicle use, etc. Both uplands and vernal pools are being re-vegetated in accordance with accepted mitigation plans, which recognize that weeds are a typical problem with habitat restoration and specify monitoring schedules as well as thresholds for tolerance of non-native species (relative total cover) and mechanisms for removal, as necessary. *Chrysanthemum* spp. were observed colonizing the site from an area along SR-905.

Edge Effects

The restoration site is adjacent to an existing industrial park/warehouse complex, and litter and non-native species from the developed area may impact the preserve. However, the area is also connected to a large open space/MHPA area, including additional vernal pool sites, which minimizes impacts from isolation.

Trespass

Trespass has been significantly lowered through the installation of fencing and signage and the presence of restoration crews and Border Patrol. Limited impacts from immigrant foot traffic continue to occur.

Required Management Activities

The contractual obligations contained in the *City of San Diego Vernal Pool and Coastal Sage Scrub Restoration and Preservation Plan on Otay Mesa* (RECON, 1998) have been fulfilled. The *Plan* states that, "Long-term maintenance will be performed as required, in accordance with natural open space maintenance procedures established by the City of San Diego."

As part of the project, the site has been fenced with permanent chain link and appropriate signage has been posted.

Management Recommendations

Active habitat management shall continue, as necessary, to maintain the quality of the site. Fence repair will be required as necessary in perpetuity. Semi-annual maintenance patrols should occur to determine the need for fence repair and/or signage replacement, as well as litter and invasive species assessment.

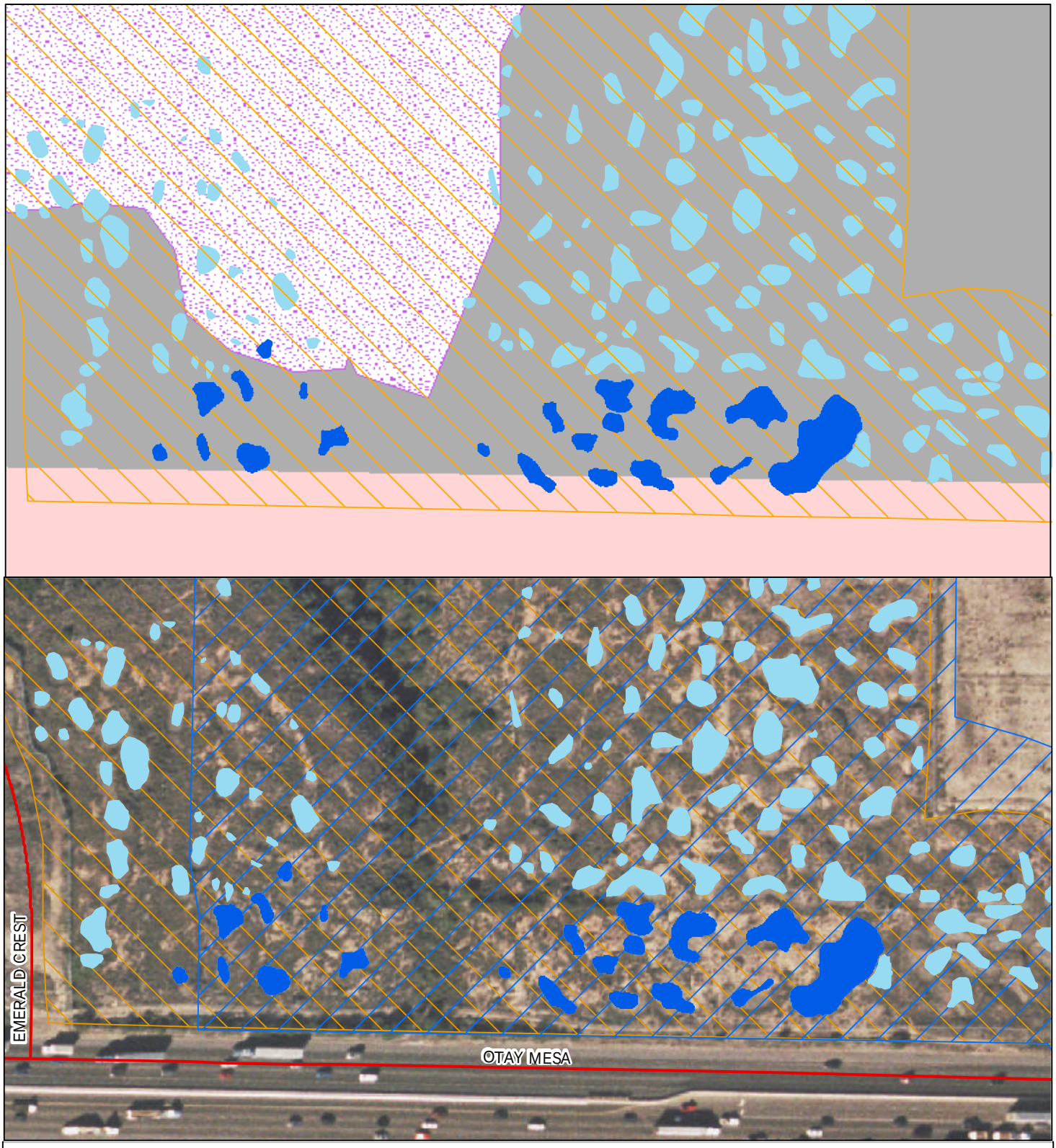
Weeding within and immediately adjacent to vernal pools should be done by hand. In upland areas, mechanical removal may be necessary; however, herbicides should not be used in or adjacent to vernal pools. Targeted species for removal include, but are not limited to Italian ryegrass (*Lolium multiflorum*), rabbitfoot grass (*Polypogon monspeliensis*), yard knotweed (*Polygonum arenastrum*), fennel (*Foeninculum vulgare*) and curly dock (*Rumex crispus*). Remove *Chrysanthemum* spp. from the southern edge along SR-905.

If the maintenance patrols determine that active management is necessary after completion of the mitigation period, all work should take into the consideration the sensitivity of on-site habitats, including adequate training of crews and supervision by a qualified biologist.

As additional information becomes available, the site shall be managed to improve habitat conditions for native, solitary bees known as obligate pollinators for vernal pool species.

Land managers should encourage research at this site, especially relating to the long-term success of restored and created vernal pools and upland vegetation.

Figure 68



Otay Mesa Road RECON (J 2 W)

Roads
MHPA
Conserved Lands
Vernal Pools at Site
Adjacent Vernal Pools
Coastal Sage Scrub
Disturbed Land
Agriculture

0.02 Miles
0.06 Kilometers

Note: MHPA and Roads not shown in top map; vegetation mapping per Ogden 1997.

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8.1.9.aa *Cal Terraces (J 2 N/W/S)*

Site Description and Existing Conditions

Cal Terraces (J 2 N/W/S) is a 172.7-acre vernal pool preserve and restoration site located northwest of the intersection of SR-905 and Corporate Center Drive, and southeast of the intersection of SR-905 and Innovative Drive in Otay Mesa. These two areas were restored and conserved as mitigation for Otay Corporate Center North and South (LDR 88-1144) and California Terraces (LDR 86-1032); U.S. Fish and Wildlife Service Biological Opinion 1-6-95-F-35 and U.S. Army Corps of Engineers File No. 9520130-DZ were issued in regards to this site. The mitigation project has completed the five year management and monitoring requirement, and the land will be deeded to the City of San Diego upon the approval of a long-term management funding source. Both sites are within the MHPA and the land is zoned Open Space. Surrounding land uses include the open space/MHPA in Dennery Canyon, transportation, institutional facilities, multi-family residential and office parks.

Three hundred and thirty-five vernal pools, totaling (17,394 m^2 [1.74 ha 4.298 acres]), were restored according to the specifications set forth in the *Dennery Canyon Vernal Pool, Coastal Sage Scrub, and Mule Fat Scrub Restoration and Preservation Plan* (RECON, 1997). For additional information, see also the *Conceptual Mitigation Plan for Impacts to Areas Within the Jurisdiction of the California Department of Fish and Game, Otay Mesa Projects* (Glenn Lukos Associates, 1995) and the *As-Built Dennery Canyon Vernal Pool, Coastal Sage Scrub, and Mule Fat Scrub Restoration and Preservation Plan* (RECON, 1997). Vernal pools occurred in this area historically, but many were disturbed or destroyed by off-road vehicle use prior to restoration. The site is characterized by Stockpen gravelly clay loam, and upland areas have been re-vegetated with coastal sage scrub. Sensitive species on-site include *E. aristulatum, N. fossalis, O. californica, P. nudiuscula, B. sandiegonensis,* and *S. woottoni*.

Although considered separately here due to ownership and conservation status, the Cal Terraces site is geographically related to vernal pools at J 2 West, Otay Mesa Road Helix, Otay Mesa Road RECON, and Hidden Trails, and is part of the same complex and series.

U.S. Fish and Wildlife Service Biological Opinion 1-6-95-F-35 addressed impacts to 162 vernal pools, including *E. aristulatum, N. fossalis, P. nudiuscula, B. sandiegonensis* and S. *woottoni*. Mitigation of impacts was required at a 2:1 ratio with a minimum of 111,000 total square feet.

Threats

Restoration Success

The *Dennery Canyon Vernal Pool, Coastal Sage Scrub, and Mule Fat Scrub Restoration and Preservation Plan* (RECON, 1997) specifies success criteria for the restored vernal pools, including species diversity, target vegetative cover, indicator wildlife species, percent cover of weed species and hydrologic regime. The final monitoring report has been approved and the five year maintenance and monitoring requirements are complete.

Invasive Species
Prior to restoration, non-native invasive species were introduced through disturbance such as off-road vehicle use. Both uplands and vernal pools were re-vegetated in accordance with the accepted mitigation plan, which recognized that weeds are a typical problem with habitat restoration and specified monitoring schedules as well as thresholds for tolerance of non-native species (based on relative total cover) and mechanisms for removal, as necessary. *Chrysanthemum* species were observed invading adjacent sites in 2005 and may represent a threat this site.

Edge Effects
The restoration site is adjacent to an existing industrial park/warehouse complex and a high-traffic roadway, and litter and non-native species from the developed area may impact the preserve. However, the site is fenced and is also connected to a large open space/MHPA area, including additional vernal pool sites, which minimizes impacts from isolation.

Trespass
Trespass at the site has been significantly lowered through the installation of fencing and signage, and the presence of restoration crews and Border Patrol. Limited impacts from immigrant foot traffic continue to occur.

Fire and Fire Suppression
Cal Terraces is part of the larger Dennery Canyon open space system which may be subject to fire in the future. The sensitive species at this site have evolved in natural fire regimes and are not expected to be impacted in the case of fire. Fencing, bollards and K-rails have been installed and would likely prevent fire suppression impacts such as fire truck staging areas.

Required Management Activities

The contractual obligations contained in the *Dennery Canyon Vernal Pool, Coastal Sage Scrub, and Mule Fat Scrub Restoration and Preservation Plan* (RECON, 1997) has been fulfilled. As stated in the Plan, upon establishment of a long-term management fund, the property and management obligation will be the responsibility of the City of San Diego

As part of the project, the site has been fenced with permanent chain link and off-road vehicle deterrent fencing and appropriate signage has been posted.

Management Recommendations

Active habitat management shall continue, as necessary, to maintain the quality of the site. Fence repair will be required as necessary in perpetuity. Semi-annual maintenance patrols should occur to determine the need for fence repair and/or signage replacement, as well as litter and invasive species assessment.

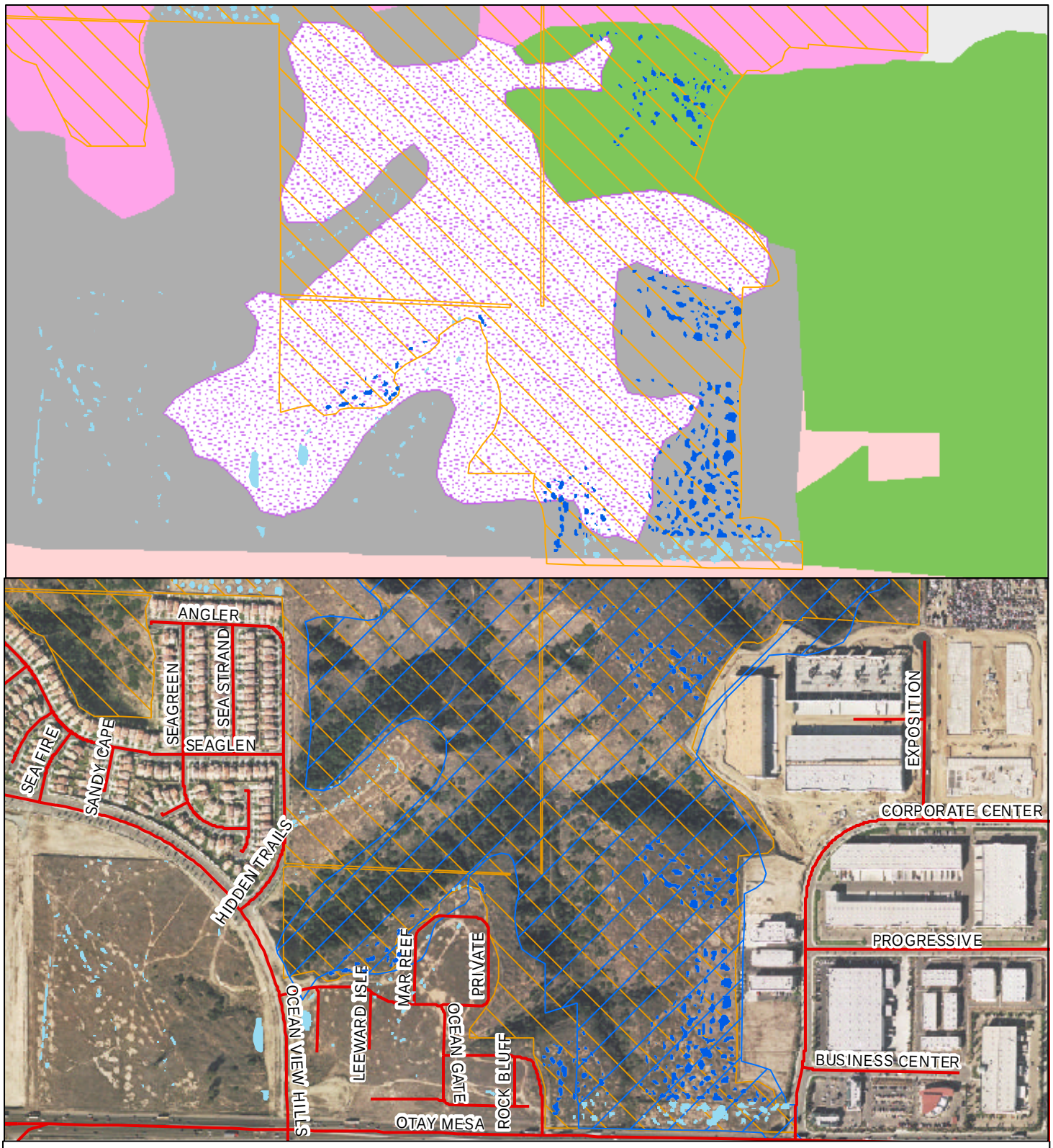
If the maintenance patrols determine that active management is necessary after completion of the mitigation period, all work should take into the consideration the sensitivity of on-site habitats, including adequate training of crews and supervision by a qualified biologist.

If weed control is deemed necessary, weeding within and immediately adjacent to vernal pools should be done by hand. In upland areas, mechanical removal may be necessary, however, herbicides should not be used in or adjacent to vernal pools. Targeted species for removal include, but are not limited to, Italian ryegrass (*Lolium multiflorum*), rabbitfoot grass (*Polypogon monspeliensis*), yard knotweed (*Polygonum arenastrum*), fennel (*Foeninculum vulgare*) and curly dock (*Rumex crispus*). *Chrysanthemum* spp. should be removed if it spreads from the southern edge of the adjacent site.

As additional information becomes available, the site shall be managed to improve habitat conditions for native, solitary bees known to be obligate pollinators for vernal pool species.

Land managers should encourage research at this site, especially relating to the long-term success of restored vernal pools and upland vegetation.

Figure 69



Cal Terraces (J 2 N/W/S)

Roads
MHPA
Conserved Lands
Vernal Pools at Site
Adjacent Vernal Pools
Coastal Sage Scrub
Maritime Succulent Scrub
Grassland
Disturbed Land
Agriculture
Urban/Developed

0.08 Miles
0.2 Kilometers

Note: MHPA and Roads not shown in top map; vegetation mapping per Ogden 1997.